

Appl. No. 09/940,273
Amtd. Dated November 28, 2005
Reply to Office Action of October 17, 2005

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1-52. (Canceled)

53. (Previously Presented) An implantable cardioverter-defibrillator comprising:
a housing including a major surface;
an electrical circuit located within the housing;
a first subcutaneous electrode comprising an electrically active portion defined within the confines of the major surface of the housing to focus cardioversion-defibrillation energy emitted from the first electrode in a predetermined direction away from the major surface of the housing, the first electrode coupled to the electrical circuit; and

a second subcutaneous electrode coupled to the electrical circuit, wherein a cardioversion-defibrillation energy is delivered between the first and the second subcutaneous electrodes.

54. (Previously Presented) The implantable cardioverter-defibrillator of claim 53, wherein at least a portion of the housing is curved to focus cardioversion-defibrillation energy emitted from the first electrode in the predetermined direction.

55. (Original) The implantable cardioverter-defibrillator of claim 53, wherein the housing has a length of approximately 3 centimeters to approximately 30 centimeters.

56. (Original) The implantable cardioverter-defibrillator of claim 53, wherein the housing has a length of approximately 5 centimeters to approximately 20 centimeters.

57. (Original) The implantable cardioverter-defibrillator of claim 53, wherein the housing has a length of approximately 5 centimeters to approximately 12 centimeters.

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58. (Original) The implantable cardioverter-defibrillator of claim 53, wherein the housing further comprises a depth, wherein the cardioverter-defibrillator is less than approximately 15 millimeters.

59. (Original) The implantable cardioverter-defibrillator of claim 53, wherein the electrical circuit can provide monophasic waveform cardioversion-defibrillation for a patient's heart.

60. (Original) The implantable cardioverter-defibrillator of claim 53, wherein the electrical circuit can provide multiphasic waveform cardioversion-defibrillation for a patient's heart.

61. (Original) The implantable cardioverter-defibrillator of claim 60, wherein the electrical circuit can provide biphasic waveform cardioversion-defibrillation for a patient's heart.

62. (Original) The implantable cardioverter-defibrillator of claim 60, wherein the electrical circuit can provide triphasic waveform cardioversion-defibrillation for a patient's heart.

63. (Previously Presented) The implantable cardioverter-defibrillator of claim 53, wherein the first electrode can emit an energy for shocking the patient's heart.

64. (Previously Presented) The implantable cardioverter-defibrillator of claim 63, wherein the energy for shocking the patient's heart is approximately 25 J to approximately 50 J.

65. (Previously Presented) The implantable cardioverter-defibrillator of claim 63, wherein the energy for shocking the patient's heart is approximately 50 J to approximately 75 J.

66. (Previously Presented) The implantable cardioverter-defibrillator of claim 63, wherein the energy for shocking the patient's heart is approximately 75 J to approximately 100 J.

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67. (Previously Presented) The implantable cardioverter-defibrillator of claim 63, wherein the energy for shocking the patient's heart is approximately 100 J to approximately 125 J.

68. (Previously Presented) The implantable cardioverter-defibrillator of claim 63, wherein the energy for shocking the patient's heart is approximately 125 J to approximately 150 J.

69. (Previously Presented) The implantable cardioverter-defibrillator of claim 63, wherein the energy for shocking the patient's heart is approximately 150 J.

70. (Original) The implantable cardioverter-defibrillator of claim 63, wherein the first electrode can further receive sensory information.

71. (Original) The implantable cardioverter-defibrillator of claim 53, wherein the first electrode can receive sensory information.

72. (Previously Presented) The implantable cardioverter-defibrillator of claim 53, wherein at least a portion of the first electrode is curved to focus cardioversion-defibrillation energy emitted from the first electrode in the predetermined direction.

73. (Original) The implantable cardioverter-defibrillator of claim 53, wherein the first electrode is less than approximately 1000 square millimeters in area.

74. (Previously Presented) The implantable cardioverter-defibrillator of claim 53, wherein at least a portion of the housing on which the first electrode is defined is ceramic.

75. (Original) The implantable cardioverter-defibrillator of claim 53, wherein the second electrode is located on the housing.

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76. (Previously Presented) An implantable cardioverter-defibrillator for subcutaneous positioning between the third rib and the twelfth rib within a patient, the implantable cardioverter-defibrillator comprising:

a housing;

an electrical circuit located within the housing;

a first electrode coupled to the electrical circuit, wherein the first electrode is positioned at a first point with respect to the patient's heart; and

a second electrode coupled to the electrical circuit, wherein the second electrode is positioned at a second point that is substantially on the opposite side of the patient's heart from the first point;

wherein the housing further comprises a first end and a second end, wherein the first electrode is located on the first end of the housing and the second electrode is located on the second end of the housing; wherein a cardioversion-defibrillation energy is delivered between the first and the second electrodes.

77. (Original) The implantable cardioverter-defibrillator of claim 53, wherein the second electrode is disposed on a lead.

78. (Original) The implantable cardioverter-defibrillator of claim 77, wherein the lead is approximately 5 centimeters to approximately 55 centimeters in length.

79. (Original) The implantable cardioverter-defibrillator of claim 78, wherein the lead is approximately 5 centimeters to approximately 15 centimeters in length.

80. (Original) The implantable cardioverter-defibrillator of claim 78, wherein the lead is approximately 15 centimeters to approximately 25 centimeters in length.

81. (Original) The implantable cardioverter-defibrillator of claim 78, wherein the lead is approximately 25 centimeters to approximately 35 centimeters in length.

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82. (Original) The implantable cardioverter-defibrillator of claim 78, wherein the lead is approximately 35 centimeters to approximately 45 centimeters in length.

83. (Original) The implantable cardioverter-defibrillator of claim 78, wherein the lead is approximately 45 centimeters to approximately 55 centimeters in length.

84. (Currently Amended) The implantable cardioverter-defibrillator of claim 53, wherein the first electrode is adapted to be disposed at a first point approximately in [[the]] an anterior portion of a patient's ribcage.

85. (Currently Amended) The implantable cardioverter-defibrillator of claim 53, wherein the first electrode is adapted to be disposed at a first point approximately in a parasternal region of [[the]] a patient.

86. (Currently Amended) The implantable cardioverter-defibrillator of claim 85, wherein the first electrode is adapted to be disposed at a first point approximately in a left parasternal region of [[the]] a patient.

87. (Previously Presented) The implantable cardioverter-defibrillator of claim 53, wherein the second electrode is adapted to be disposed at a second point approximately in a posterior region of a patient's ribcage.

88. (Currently Amended) The implantable cardioverter-defibrillator of claim 53, wherein the second electrode is adapted to be disposed at a second point approximately in a paraspinal region of [[the]] a patient.

89. (Currently Amended) The implantable cardioverter-defibrillator of claim 53, wherein the second electrode is adapted to be disposed at a second point approximately in a parascapular region of [[the]] a patient.

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90. (Currently Amended) The implantable cardioverter-defibrillator of claim 53, wherein the second electrode is spaced from the first electrode by a length such that when the first electrode is disposed at a first predetermined subcutaneous position between [[the]] a third rib and [[the]] a twelfth rib within [[the]] a patient, the length of the spacing provides for the second electrode to be disposed at a second predetermined subcutaneous position between the third rib and the twelfth rib within the patient such that a depolarization vector is defined between the first electrode and the second electrode, wherein the depolarization vector defines an angle of separation between the first electrode and the second electrode with respect to a point within the patient's heart, and wherein a cardioversion-defibrillation energy is delivered between the first and the second subcutaneous electrodes.

91. (Original) The implantable cardioverter-defibrillator of claim 90, wherein the angle of separation is between approximately 30 degrees and approximately 90 degrees.

92. (Original) The implantable cardioverter-defibrillator of claim 90, wherein the angle of separation is between approximately 90 degrees and approximately 120 degrees.

93. (Original) The implantable cardioverter-defibrillator of claim 90, wherein the angle of separation is between approximately 120 degrees and approximately 150 degrees.

94. (Original) The implantable cardioverter-defibrillator of claim 90, wherein the angle of separation is between approximately 150 degrees and approximately 180 degrees.

95. (Previously Presented) An implantable cardioverter defibrillator for subcutaneous positioning between the third rib and the twelfth rib within a patient, the implantable cardioverter-defibrillator comprising:

- a housing;
- an electrical circuit located within the housing;

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a first subcutaneous electrode coupled to the electrical circuit and disposed on the housing; and

a second subcutaneous electrode coupled to the electrical circuit, wherein the second electrode is spaced from the first electrode by a length such that when the first subcutaneous electrode is disposed at a first predetermined subcutaneous position between the third rib and the twelfth rib within the patient, the length allows the second subcutaneous electrode to be subcutaneously disposed at a second predetermined subcutaneous position between the third rib and the twelfth rib within the patient such that a degree of separation between the first and second subcutaneous electrodes is defined about the patient's ribcage with respect to a point within the patient's heart, the degree of separation being in the range of approximately 30 degrees to approximately 180 degrees, with respect to the point within the patient's heart, and wherein a cardioversion-defibrillation energy is delivered between the first and the second subcutaneous electrodes.

96. (Previously Presented) The implantable cardioverter-defibrillator of claim 95, wherein at least a portion of the housing is curved to focus cardioversion-defibrillation energy emitted from the first electrode in a predetermined direction.

97. (Original) The implantable cardioverter-defibrillator of claim 95, wherein the housing has a length of approximately 3 centimeters to approximately 30 centimeters.

98. (Original) The implantable cardioverter-defibrillator of claim 95, wherein the housing has a length of approximately 5 centimeters to approximately 20 centimeters.

99. (Original) The implantable cardioverter-defibrillator of claim 95, wherein the housing has a length of approximately 5 centimeters to approximately 12 centimeters.

100. (Previously Presented) The implantable cardioverter-defibrillator of claim 95, wherein the housing further comprises a depth, wherein the depth is less than approximately 15 millimeters.

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101. (Original) The implantable cardioverter-defibrillator of claim 95, wherein the electrical circuit can provide monophasic waveform cardioversion-defibrillation for a patient's heart.

102. (Original) The implantable cardioverter-defibrillator of claim 95, wherein the electrical circuit can provide multiphasic waveform cardioversion-defibrillation for a patient's heart.

103. (Original) The implantable cardioverter-defibrillator of claim 102, wherein the electrical circuit can provide biphasic waveform cardioversion-defibrillation for a patient's heart.

104. (Original) The implantable cardioverter-defibrillator of claim 102, wherein the electrical circuit can provide triphasic waveform cardioversion-defibrillation for a patient's heart.

105. (Previously Presented) The implantable cardioverter-defibrillator of claim 95, wherein the first electrode can emit an energy for shocking the patient's heart.

106. (Previously Presented) The implantable cardioverter-defibrillator of claim 105, wherein the energy for shocking the patient's heart is approximately 25 J to approximately 50 J.

107. (Previously Presented) The implantable cardioverter-defibrillator of claim 105, wherein the energy for shocking the patient's heart is approximately 50 J to approximately 75 J.

108. (Previously Presented) The implantable cardioverter-defibrillator of claim 105, wherein the energy for shocking the patient's heart is approximately 75 J to approximately 100 J.

109. (Previously Presented) The implantable cardioverter-defibrillator of claim 105, wherein the energy for shocking the patient's heart is approximately 100 J to approximately 125 J.

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110. (Previously Presented) The implantable cardioverter-defibrillator of claim 105, wherein the energy for shocking the patient's heart is approximately 125 J to approximately 150 J.

111. (Previously Presented) The implantable cardioverter-defibrillator of claim 105, wherein the energy for shocking the patient's heart is approximately 150 J.

112. (Original) The implantable cardioverter-defibrillator of claim 105, wherein the first electrode can further receive sensory information.

113. (Original) The implantable cardioverter-defibrillator of claim 95, wherein the first electrode can receive sensory information.

114. (Previously Presented) The implantable cardioverter-defibrillator of claim 95, wherein at least a portion of the first electrode is curved to focus cardioversion-defibrillation energy emitted from the first electrode in a predetermined direction.

115. (Original) The implantable cardioverter-defibrillator of claim 95, wherein the first electrode is less than approximately 2000 square millimeters in area.

116. (Previously Presented) The implantable cardioverter-defibrillator of claim 95, wherein at least a portion of the housing is ceramic.

117. (Original) The implantable cardioverter-defibrillator of claim 95, wherein the second electrode is located on the housing.

118. (Original) The implantable cardioverter-defibrillator of claim 95, wherein the housing further comprises a first end and a second end, wherein the first electrode is located on the first end of the housing and the second electrode is located on the second end of the housing.

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119. (Original) The implantable cardioverter-defibrillator of claim 95, wherein the second electrode is disposed on a lead.

120. (Original) The implantable cardioverter-defibrillator of claim 119, wherein the lead is approximately 5 centimeters to approximately 55 centimeters in length.

121. (Original) The implantable cardioverter-defibrillator of claim 120, wherein the lead is approximately 5 centimeters to approximately 15 centimeters in length.

122. (Original) The implantable cardioverter-defibrillator of claim 120, wherein the lead is approximately 15 centimeters to approximately 25 centimeters in length.

123. (Original) The implantable cardioverter-defibrillator of claim 120, wherein the lead is approximately 25 centimeters to approximately 35 centimeters in length.

124. (Original) The implantable cardioverter-defibrillator of claim 120, wherein the lead is approximately 35 centimeters to approximately 45 centimeters in length.

125. (Original) The implantable cardioverter-defibrillator of claim 120, wherein the lead is approximately 45 centimeters to approximately 55 centimeters in length.

126. (Currently Amended) The implantable cardioverter-defibrillator of claim 95, wherein the first predetermined subcutaneous position is adjacent [[the]] an anterior portion of a patient's ribcage.

127. (Previously Presented) The implantable cardioverter-defibrillator of claim 95, wherein the first predetermined subcutaneous position is in a parasternal region of the patient.

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128. (Previously Presented) The implantable cardioverter-defibrillator of claim 127, wherein the first predetermined subcutaneous position is in a left parasternal region of the patient.

129. (Previously Presented) The implantable cardioverter-defibrillator of claim 95, wherein the second predetermined subcutaneous position is adjacent a posterior region of a patient's ribcage.

130. (Previously Presented) The implantable cardioverter-defibrillator of claim 95, wherein the second predetermined subcutaneous position is in a paraspinal region of the patient.

131. (Previously Presented) The implantable cardioverter-defibrillator of claim 95, wherein the second predetermined subcutaneous position is in a parascapular region of the patient.

132. (Previously Presented) The implantable cardioverter-defibrillator of claim 95, wherein the degree of separation of the first and second subcutaneous electrodes is approximately 30 degrees to approximately 60 degrees.

133. (Previously Presented) The implantable cardioverter-defibrillator of claim 95, wherein the degree of separation of the first and second subcutaneous electrodes is approximately 60 degrees to approximately 90 degrees.

134. (Previously Presented) The implantable cardioverter-defibrillator of claim 95, wherein the degree of separation of the first and second subcutaneous electrodes is approximately 90 degrees to approximately 120 degrees.

135. (Previously Presented) The implantable cardioverter-defibrillator of claim 95, wherein the degree of separation of the first and second subcutaneous electrodes is approximately 120 degrees to approximately 150 degrees.

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136. (Previously Presented) The implantable cardioverter-defibrillator of claim 95, wherein the degree of separation of the first and second subcutaneous electrodes is approximately 150 degrees to approximately 180 degrees.

137-219. (Canceled)